SEQUENCE LISTING

<110> Bristol-Myers Squibb Company

<120> A NOVEL HUMAN LEUCINE-RICH REPEAT CONTAINING PROTEIN EXPRESSED PREDOMINATELY IN SMALL INTESTINE, HLRRSI1

<130> D0066NP

<150> US 60/257,774
<151> 2000-12-22

<160> 40

<170> PatentIn version 3.0

<210> 1
<211> 2689
<212> DNA
<213> homo sapiens

<220>
<221> CDS
<222> (75)..(1949)

<400> 1
cggacgcgtg ggcgcgcagc ctggctgacc tgatcctgga ccagtgcccc gaccgcggcg 60

cgccggtgcc gcag atg ctg gcc cag ccg cag cgg ctg ctc ttc atc ctg 110
Met Leu Ala Gln Pro Gln Arg Leu Leu Phe Ile Leu
1 5 10

gac ggc gcg gac gag ctg ccg gcg ctg ggg ggc ccc gag gcc gcg ccc 158
Asp Gly Ala Asp Glu Leu Pro Ala Leu Gly Gly Pro Glu Ala Ala Pro
15 20 25

tgc aca gac ccc ttc gag gcg gcg agc ggc gcg cgg gtg cta ggc ggg 206
Cys Thr Asp Pro Phe Glu Ala Ala Ser Gly Ala Arg Val Leu Gly Gly
30 35 40

ctg ctg agt aag gcg ctg ctg ccc acg gcc ctc ctg ctg gtg acc acg 254
Leu Leu Ser Lys Ala Leu Leu Pro Thr Ala Leu Leu Leu Val Thr Thr
45 50 55 60

cgc gcc gcc gcc ccc ggg agg ctg cag ggc cgc ctg tgt tcc ccg cag 302
Arg Ala Ala Ala Pro Gly Arg Leu Gln Gly Arg Leu Cys Ser Pro Gln
65 70 75

tgc gcc gag gtg cgc ggc ttc tcc gac aag gac aag aag aag tat ttc 350
Cys Ala Glu Val Arg Gly Phe Ser Asp Lys Asp Lys Lys Lys Tyr Phe
80 85 90

tac aag ttc ttc cgg gat gag agg agg gcc gag cgc gcc tac cgc ttc 398
Tyr Lys Phe Phe Arg Asp Glu Arg Arg Ala Glu Arg Ala Tyr Arg Phe
95 100 105

gtg aag gag aac gag acg ctg ttc gcg ctg tgc ttc gtg ccc ttc gtg 446
Val Lys Glu Asn Glu Thr Leu Phe Ala Leu Cys Phe Val Pro Phe Val
110 115 120

tgc tgg atc gtg tgc acc gtg ctg cgc cag cag ctg gag ctc ggt cgg 494

```
Cys Trp Ile Val Cys Thr Val Leu Arg Gln Gln Leu Glu Leu Gly Arg
125                 130                 135                 140

gac ctg tcg cgc acg tcc aag acc acc acg tca gtg tac ctg ctt ttc      542
Asp Leu Ser Arg Thr Ser Lys Thr Thr Thr Ser Val Tyr Leu Leu Phe
                145                 150                 155

atc acc agc gtt ctg agc tcg gct ccg gta gcc gac ggg ccc cgg ttg      590
Ile Thr Ser Val Leu Ser Ser Ala Pro Val Ala Asp Gly Pro Arg Leu
            160                 165                 170

cag ggc gac ctg cgc aat ctg tgc cgc ctg gcc cgc gag ggc gtc ctc      638
Gln Gly Asp Leu Arg Asn Leu Cys Arg Leu Ala Arg Glu Gly Val Leu
        175                 180                 185

gga cgc agg gcg cag ttt gcc gag aag gaa ctg gag caa ctg gag ctt      686
Gly Arg Arg Ala Gln Phe Ala Glu Lys Glu Leu Glu Gln Leu Glu Leu
    190                 195                 200

cgt ggc tcc aaa gtg cag acg ctg ttt ctc agc aaa aag gag ctg ccg      734
Arg Gly Ser Lys Val Gln Thr Leu Phe Leu Ser Lys Lys Glu Leu Pro
205                 210                 215                 220

ggc gtg ctg gag aca gag gtc acc tac cag ttc atc gac cag agc ttc      782
Gly Val Leu Glu Thr Glu Val Thr Tyr Gln Phe Ile Asp Gln Ser Phe
                225                 230                 235

cag gag ttc ctc gcg gca ctg tcc tac ctg ctg gag gac ggc ggg gtg      830
Gln Glu Phe Leu Ala Ala Leu Ser Tyr Leu Leu Glu Asp Gly Gly Val
            240                 245                 250

ccc agg acc gcg gct ggc ggc gtt ggg aca ctc ctg cgt ggg gac gcc      878
Pro Arg Thr Ala Ala Gly Gly Val Gly Thr Leu Leu Arg Gly Asp Ala
        255                 260                 265

cag ccg cac agc cac ttg gtg ctc acc acg cgc ttc ctc ttc gga ctg      926
Gln Pro His Ser His Leu Val Leu Thr Thr Arg Phe Leu Phe Gly Leu
    270                 275                 280

ctg agc gcg gag cgg atg cgc gac atc gag cgc cac ttc ggc tgc atg      974
Leu Ser Ala Glu Arg Met Arg Asp Ile Glu Arg His Phe Gly Cys Met
285                 290                 295                 300

gtt tca gag cgt gtg aag cag gag gcc ctg cgg tgg gtg cag gga cag     1022
Val Ser Glu Arg Val Lys Gln Glu Ala Leu Arg Trp Val Gln Gly Gln
                305                 310                 315

gga cag ggc tgc ccc gga gtg gca cca gag gtg acc gag ggg gcc aaa     1070
Gly Gln Gly Cys Pro Gly Val Ala Pro Glu Val Thr Glu Gly Ala Lys
            320                 325                 330

ggg ctc gag gac acc gaa gag cca gag gag gag gag gag gga gag gag     1118
Gly Leu Glu Asp Thr Glu Glu Pro Glu Glu Glu Glu Glu Gly Glu Glu
        335                 340                 345

ccc aac tac cca ctg gag ttg ctg tac tgc ctg tac gag acg cag gag     1166
Pro Asn Tyr Pro Leu Glu Leu Leu Tyr Cys Leu Tyr Glu Thr Gln Glu
    350                 355                 360

gac gcg ttt gtg cgc caa gcc ctg tgc cgg ttc ccg gag ctg gcg ctg     1214
Asp Ala Phe Val Arg Gln Ala Leu Cys Arg Phe Pro Glu Leu Ala Leu
```

```
365                 370                 375                 380

cag cga gtg cgc ttc tgc cgc atg gac gtg gct gtt ctg agc tac tgc     1262
Gln Arg Val Arg Phe Cys Arg Met Asp Val Ala Val Leu Ser Tyr Cys
                385                 390                 395

gtg agg tgc tgc cct gct gga cag gca ctg cgg ctg atc agc tgc aga     1310
Val Arg Cys Cys Pro Ala Gly Gln Ala Leu Arg Leu Ile Ser Cys Arg
            400                 405                 410

ttg gtt gct gcg cag gag aag aag aag aag agc ctg ggg aag cgg ctc     1358
Leu Val Ala Ala Gln Glu Lys Lys Lys Lys Ser Leu Gly Lys Arg Leu
        415                 420                 425

cag gcc agc ctg ggt ggc ggc agt tct caa ggc acc aca aaa caa ctg     1406
Gln Ala Ser Leu Gly Gly Gly Ser Ser Gln Gly Thr Thr Lys Gln Leu
    430                 435                 440

cca gcc tcc ctt ctt cat cca ctc ttt cag gca atg act gac cca ctg     1454
Pro Ala Ser Leu Leu His Pro Leu Phe Gln Ala Met Thr Asp Pro Leu
445                 450                 455                 460

tgc cat ctg agc agc ctc acg ctg tcc cac tgc aaa ctc cct gac gcg     1502
Cys His Leu Ser Ser Leu Thr Leu Ser His Cys Lys Leu Pro Asp Ala
                465                 470                 475

gtc tgc cga gac ctt tct gag gcc ctg agg gca gcc ccc gca ctg acg     1550
Val Cys Arg Asp Leu Ser Glu Ala Leu Arg Ala Ala Pro Ala Leu Thr
            480                 485                 490

gag ctg ggc ctc ctc cac aac agg ctc agt gag gcg gga ctg cgt atg     1598
Glu Leu Gly Leu Leu His Asn Arg Leu Ser Glu Ala Gly Leu Arg Met
        495                 500                 505

ctg agt gag ggc cta gcc tgg ccg cag tgc agg gtg cag acg gtc agg     1646
Leu Ser Glu Gly Leu Ala Trp Pro Gln Cys Arg Val Gln Thr Val Arg
    510                 515                 520

gta cag ctg cct gac ccc cag cga ggg ctc cag tac ctg gtg ggt atg     1694
Val Gln Leu Pro Asp Pro Gln Arg Gly Leu Gln Tyr Leu Val Gly Met
525                 530                 535                 540

ctt cgg cag agc ccc gcc ctg acc acc ctg gat ctc agc ggc tgc caa     1742
Leu Arg Gln Ser Pro Ala Leu Thr Thr Leu Asp Leu Ser Gly Cys Gln
                545                 550                 555

ctg ccc gcc ccc atg gtg acc tac ctg tgt gca gtc ctg cag cac cag     1790
Leu Pro Ala Pro Met Val Thr Tyr Leu Cys Ala Val Leu Gln His Gln
            560                 565                 570

gga tgc ggc ctg cag acc ctc agt ctg gcc tct gtg gag ctg agc gag     1838
Gly Cys Gly Leu Gln Thr Leu Ser Leu Ala Ser Val Glu Leu Ser Glu
        575                 580                 585

cag tca cta cag gag ctt cag gct gtg aag aga gca aag ccg gat ctg     1886
Gln Ser Leu Gln Glu Leu Gln Ala Val Lys Arg Ala Lys Pro Asp Leu
    590                 595                 600

gtc atc aca cac cca gcg ctg gac ggc cac cca caa cct ccc aag gaa     1934
Val Ile Thr His Pro Ala Leu Asp Gly His Pro Gln Pro Pro Lys Glu
605                 610                 615                 620
```

ctc atc tcg acc ttc tgaggctctg gtggccagag cagggtggaa gaccctagtc 1989
Leu Ile Ser Thr Phe
625

aaagtccctg tggagagaac ggcccattcc aagggcagga ggatattgct ctcggccttt 2049

gggaaacttt tgagccgaga ggccgcagac aggcatgtgg gaggcccaga cacggcaccc 2109

tgccccgtcc aggacaggcc caggacctgc ccctctctcc acacctgggg taccccttct 2169

cccccagccc caccactact ccacccacct tcctctcctg agaccctcca gccattcccc 2229

ttgaaaacac cccccgaccc caagccacaa taatgacagc gagagctcca attaactaag 2289

cacctacctg gcggcagaat aacccttcac tgcctgatcc ccatctgcag tgtggcccaa 2349

cagcccccag aactatgccc acatagactg gaggtaggca gttcaccgtc cctccctgtt 2409

aggaatgaga ccatccctga ggctatggcc caggcccaca ggcgtccagt gtctgagatc 2469

tttgggaagg gagactaggg caggtggaga cagcgcagaa cccccgtgct gggtgggaag 2529

catgaccaca tggtgggtga gcagccccca tgcactgacg gtaaattccc ctgtggactc 2589

atttctgttg gtttctatta cacctggcca ggcgtggtac aatacaggtc ggtgctcaca 2649

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2689

<210> 2
<211> 625
<212> PRT
<213> homo sapiens

<400> 2

Met Leu Ala Gln Pro Gln Arg Leu Leu Phe Ile Leu Asp Gly Ala Asp
1 5 10 15

Glu Leu Pro Ala Leu Gly Gly Pro Glu Ala Ala Pro Cys Thr Asp Pro
20 25 30

Phe Glu Ala Ala Ser Gly Ala Arg Val Leu Gly Gly Leu Leu Ser Lys
35 40 45

Ala Leu Leu Pro Thr Ala Leu Leu Leu Val Thr Thr Arg Ala Ala Ala
50 55 60

Pro Gly Arg Leu Gln Gly Arg Leu Cys Ser Pro Gln Cys Ala Glu Val
65 70 75 80

Arg Gly Phe Ser Asp Lys Asp Lys Lys Lys Tyr Phe Tyr Lys Phe Phe
85 90 95

Arg Asp Glu Arg Arg Ala Glu Arg Ala Tyr Arg Phe Val Lys Glu Asn
100 105 110

Glu Thr Leu Phe Ala Leu Cys Phe Val Pro Phe Val Cys Trp Ile Val
115 120 125

Cys Thr Val Leu Arg Gln Gln Leu Glu Leu Gly Arg Asp Leu Ser Arg
130 135 140

Thr Ser Lys Thr Thr Thr Ser Val Tyr Leu Leu Phe Ile Thr Ser Val
145 150 155 160

Leu Ser Ser Ala Pro Val Ala Asp Gly Pro Arg Leu Gln Gly Asp Leu
165 170 175

Arg Asn Leu Cys Arg Leu Ala Arg Glu Gly Val Leu Gly Arg Arg Ala
180 185 190

Gln Phe Ala Glu Lys Glu Leu Glu Gln Leu Glu Leu Arg Gly Ser Lys
195 200 205

Val Gln Thr Leu Phe Leu Ser Lys Lys Glu Leu Pro Gly Val Leu Glu
210 215 220

Thr Glu Val Thr Tyr Gln Phe Ile Asp Gln Ser Phe Gln Glu Phe Leu
225 230 235 240

Ala Ala Leu Ser Tyr Leu Leu Glu Asp Gly Gly Val Pro Arg Thr Ala
245 250 255

Ala Gly Gly Val Gly Thr Leu Leu Arg Gly Asp Ala Gln Pro His Ser
260 265 270

His Leu Val Leu Thr Thr Arg Phe Leu Phe Gly Leu Leu Ser Ala Glu
275 280 285

Arg Met Arg Asp Ile Glu Arg His Phe Gly Cys Met Val Ser Glu Arg
290 295 300

Val Lys Gln Glu Ala Leu Arg Trp Val Gln Gly Gln Gly Gln Gly Cys
305 310 315 320

Pro Gly Val Ala Pro Glu Val Thr Glu Gly Ala Lys Gly Leu Glu Asp
325 330 335

Thr Glu Glu Pro Glu Glu Glu Glu Glu Gly Glu Glu Pro Asn Tyr Pro

340 345 350

Leu Glu Leu Leu Tyr Cys Leu Tyr Glu Thr Gln Glu Asp Ala Phe Val
355 360 365

Arg Gln Ala Leu Cys Arg Phe Pro Glu Leu Ala Leu Gln Arg Val Arg
370 375 380

Phe Cys Arg Met Asp Val Ala Val Leu Ser Tyr Cys Val Arg Cys Cys
385 390 395 400

Pro Ala Gly Gln Ala Leu Arg Leu Ile Ser Cys Arg Leu Val Ala Ala
405 410 415

Gln Glu Lys Lys Lys Lys Ser Leu Gly Lys Arg Leu Gln Ala Ser Leu
420 425 430

Gly Gly Gly Ser Ser Gln Gly Thr Thr Lys Gln Leu Pro Ala Ser Leu
435 440 445

Leu His Pro Leu Phe Gln Ala Met Thr Asp Pro Leu Cys His Leu Ser
450 455 460

Ser Leu Thr Leu Ser His Cys Lys Leu Pro Asp Ala Val Cys Arg Asp
465 470 475 480

Leu Ser Glu Ala Leu Arg Ala Ala Pro Ala Leu Thr Glu Leu Gly Leu
485 490 495

Leu His Asn Arg Leu Ser Glu Ala Gly Leu Arg Met Leu Ser Glu Gly
500 505 510

Leu Ala Trp Pro Gln Cys Arg Val Gln Thr Val Arg Val Gln Leu Pro
515 520 525

Asp Pro Gln Arg Gly Leu Gln Tyr Leu Val Gly Met Leu Arg Gln Ser
530 535 540

Pro Ala Leu Thr Thr Leu Asp Leu Ser Gly Cys Gln Leu Pro Ala Pro
545 550 555 560

Met Val Thr Tyr Leu Cys Ala Val Leu Gln His Gln Gly Cys Gly Leu
565 570 575

Gln Thr Leu Ser Leu Ala Ser Val Glu Leu Ser Glu Gln Ser Leu Gln
580 585 590

Glu Leu Gln Ala Val Lys Arg Ala Lys Pro Asp Leu Val Ile Thr His
595 600 605

Pro Ala Leu Asp Gly His Pro Gln Pro Pro Lys Glu Leu Ile Ser Thr
610 615 620

Phe
625

<210> 3
<211> 1429
<212> PRT
<213> homo sapiens

<400> 3

Met Ala Gly Gly Ala Trp Gly Arg Leu Ala Cys Tyr Leu Glu Phe Leu
1 5 10 15

Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Leu Ala Asn Lys Ala
20 25 30

His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr
35 40 45

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln
50 55 60

Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg
65 70 75 80

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe
85 90 95

Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr
100 105 110

Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys
115 120 125

Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser
130 135 140

Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser His Leu Tyr Gln Ala Leu
145 150 155 160

Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala
165 170 175

Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro
180 185 190

Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu
195 200 205

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg

210 215 220

Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr
225 230 235 240

Pro Pro Gln Ala His Ser Ser Leu Gln Pro His His His Pro Trp Glu
245 250 255

Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu
260 265 270

Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His
275 280 285

Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val
290 295 300

Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro
305 310 315 320

Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala
325 330 335

Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly
340 345 350

Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser
355 360 365

Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile
370 375 380

Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser
385 390 395 400

Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly
405 410 415

Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln
420 425 430

Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile
435 440 445

Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln
450 455 460

Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly
465 470 475 480

Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp
485 490 495

Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu
500 505 510

Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr
515 520 525

Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser
530 535 540

Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln
545 550 555 560

Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala
565 570 575

Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg
580 585 590

Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly
595 600 605

Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu
610 615 620

Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu
625 630 635 640

Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr
645 650 655

Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg
660 665 670

Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn
675 680 685

Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val
690 695 700

Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His
705 710 715 720

Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala
725 730 735

His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu
740 745 750

Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln
755 760 765

Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Ser Met Val
770 775 780

Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu
785 790 795 800

Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser
805 810 815

Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu
820 825 830

Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly
835 840 845

Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn
850 855 860

Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Met Asp Ala
865 870 875 880

Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu
885 890 895

Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln
900 905 910

Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp
915 920 925

Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu
930 935 940

Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Leu Asp Gln
945 950 955 960

Thr Thr Leu Ser Asp Glu Met Arg Gln Glu Leu Arg Ala Leu Glu Gln
965 970 975

Glu Lys Pro Gln Leu Leu Ile Phe Ser Arg Arg Lys Pro Ser Val Met
980 985 990

Thr Pro Ile Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser Thr Ser
995 1000 1005

Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser His
1010 1015 1020

Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe
1025 1030 1035

Pro Ile Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro
1040 1045 1050

Val Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu
1055 1060 1065

His Thr Lys Pro Leu Gly Thr Asp Asp Asp Phe Trp Gly Pro Thr
1070 1075 1080

Gly Pro Val Ala Thr Glu Val Val Asp Lys Glu Lys Asn Leu Tyr
1085 1090 1095

Arg Val His Phe Pro Val Ala Gly Ser Tyr Arg Trp Pro Asn Thr
1100 1105 1110

Gly Leu Cys Phe Val Val Arg Glu Ala Val Thr Val Glu Ile Glu
1115 1120 1125

Phe Cys Val Trp Asp Gln Phe Leu Gly Glu Ile Asn Pro Gln His
1130 1135 1140

Ser Trp Met Val Ala Gly Pro Leu Leu Asp Ile Lys Ala Glu Pro
1145 1150 1155

Gly Ala Val Glu Ala Val His Leu Pro His Phe Val Ala Leu Gln
1160 1165 1170

Gly Gly His Val Asp Thr Ser Leu Phe Gln Val Ala His Phe Lys

1175 1180 1185

Glu Glu Gly Met Leu Leu Glu Lys Pro Ala Arg Val Glu Leu His
1190 1195 1200

His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro Leu Gly Val Leu
1205 1210 1215

Leu Lys Met Ile His Asn Ala Leu Arg Phe Ile Pro Val Thr Ser
1220 1225 1230

Val Val Leu Leu Tyr His Arg Leu His Pro Glu Glu Val Thr Phe
1235 1240 1245

His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Glu Leu
1250 1255 1260

Glu Leu Cys Tyr Arg Ser Pro Gly Glu Asp Gln Leu Phe Ser Glu
1265 1270 1275

Phe Tyr Val Gly His Leu Gly Ser Gly Ile Arg Leu Gln Val Lys
1280 1285 1290

Asp Lys Lys Asp Glu Thr Leu Val Trp Glu Ala Leu Val Lys Pro
1295 1300 1305

Gly Asp Leu Met Pro Ala Thr Thr Leu Ile Pro Pro Ala Cys Ile
1310 1315 1320

Ala Val Pro Ser Pro Leu Asp Ala Pro Gln Leu Leu His Phe Val
1325 1330 1335

Asp Gln Tyr Arg Glu Gln Leu Ile Ala Arg Val Thr Ser Val Glu
1340 1345 1350

Val Val Leu Asp Lys Leu His Gly Gln Val Leu Ser Gln Glu Gln
1355 1360 1365

Tyr Glu Arg Val Leu Ala Glu Asn Thr Arg Pro Ser Gln Met Arg
1370 1375 1380

Lys Leu Phe Ser Leu Ser Gln Ser Trp Asp Arg Lys Cys Lys Asp
1385 1390 1395

Gly Leu Tyr Gln Ala Leu Lys Glu Thr His Pro His Leu Ile Met
1400 1405 1410

Glu Leu Trp Glu Lys Gly Ser Lys Lys Gly Leu Leu Pro Leu Ser
1415 1420 1425

Ser

<210> 4
<211> 1033
<212> PRT
<213> Homo sapiens

<400> 4

Met Gly Phe Asn Leu Gln Ala Leu Leu Glu Gln Leu Ser Gln Asp Glu

```
1               5                   10                  15

Leu Ser Lys Phe Lys Tyr Leu Ile Thr Thr Phe Ser Pro Ala His Glu
            20                  25                  30

Leu Gln Lys Ile Pro His Lys Glu Val Asp Lys Ala Asp Gly Lys Gln
        35                  40                  45

Leu Val Glu Ile Leu Thr Thr His Cys Asp Ser Tyr Trp Val Glu Met
    50                  55                  60

Ala Ser Leu Gln Val Phe Glu Lys Met His Arg Met Asp Leu Ser Glu
65                  70                  75                  80

Arg Ala Lys Asp Glu Val Arg Glu Ala Ala Leu Lys Ser Phe Asn Lys
                85                  90                  95

Arg Lys Pro Leu Ser Leu Gly Ile Thr Arg Lys Glu Arg Pro Pro Leu
            100                 105                 110

Asp Val Asp Glu Met Leu Glu Arg Phe Lys Thr Glu Ala Gln Asp Lys
        115                 120                 125

Asp Asn Arg Cys Arg Tyr Ile Leu Lys Thr Lys Phe Arg Glu Met Trp
    130                 135                 140

Lys Ser Trp Pro Gly Asp Ser Lys Glu Val Gln Val Met Ala Glu Arg
145                 150                 155                 160

Tyr Lys Met Leu Ile Pro Phe Ser Asn Pro Arg Val Leu Pro Gly Pro
                165                 170                 175

Phe Ser Tyr Thr Val Val Leu Tyr Gly Pro Ala Gly Leu Gly Lys Thr
            180                 185                 190

Thr Leu Ala Gln Lys Leu Met Leu Asp Trp Ala Glu Asp Asn Leu Ile
        195                 200                 205

His Lys Phe Lys Tyr Ala Phe Tyr Leu Ser Cys Arg Glu Leu Ser Arg
    210                 215                 220

Leu Gly Pro Cys Ser Phe Ala Glu Leu Val Phe Arg Asp Trp Pro Glu
225                 230                 235                 240

Leu Gln Asp Asp Ile Pro His Ile Leu Ala Gln Ala Arg Lys Ile Leu
                245                 250                 255

Phe Val Ile Asp Gly Phe Asp Glu Leu Gly Ala Ala Pro Gly Ala Leu
            260                 265                 270

Ile Glu Asp Ile Cys Gly Asp Trp Glu Lys Lys Lys Pro Val Pro Val
        275                 280                 285

Leu Leu Gly Ser Leu Leu Asn Arg Val Met Leu Pro Lys Ala Ala Leu
    290                 295                 300

Leu Val Thr Thr Arg Pro Arg Ala Leu Arg Asp Leu Arg Ile Leu Ala
305                 310                 315                 320

Glu Glu Pro Ile Tyr Ile Arg Val Glu Gly Phe Leu Glu Glu Asp Lys
                325                 330                 335
```

Arg Ala Tyr Phe Leu Arg His Phe Gly Asp Glu Asp Gln Ala Met Arg
340 345 350

Ala Phe Glu Leu Met Arg Ser Asn Ala Ala Leu Phe Gln Leu Gly Ser
355 360 365

Ala Pro Ala Val Cys Trp Ile Val Cys Thr Thr Leu Lys Leu Gln Met
370 375 380

Glu Lys Gly Glu Asp Pro Val Pro Thr Cys Leu Thr Arg Thr Gly Leu
385 390 395 400

Phe Leu Arg Phe Leu Cys Ser Arg Phe Pro Gln Gly Ala Gln Leu Arg
405 410 415

Gly Ala Leu Arg Thr Leu Ser Leu Leu Ala Ala Gln Gly Leu Trp Ala
420 425 430

Gln Thr Ser Val Leu His Arg Glu Asp Leu Glu Arg Leu Gly Val Gln
435 440 445

Glu Ser Asp Leu Arg Leu Phe Leu Asp Gly Asp Ile Leu Arg Gln Asp
450 455 460

Arg Val Ser Lys Gly Cys Tyr Ser Phe Ile His Leu Ser Phe Gln Gln
465 470 475 480

Phe Leu Thr Ala Leu Phe Tyr Thr Leu Glu Lys Glu Glu Glu Glu Asp
485 490 495

Arg Asp Gly His Thr Trp Asp Ile Gly Asp Val Gln Lys Leu Leu Ser
500 505 510

Gly Val Glu Arg Leu Arg Asn Pro Asp Leu Ile Gln Ala Gly Tyr Tyr
515 520 525

Ser Phe Gly Leu Ala Asn Glu Lys Arg Ala Lys Glu Leu Glu Ala Thr
530 535 540

Phe Gly Cys Arg Met Ser Pro Asp Ile Lys Gln Glu Leu Leu Arg Cys
545 550 555 560

Asp Ile Ser Cys Lys Gly Gly His Ser Thr Val Thr Asp Leu Gln Glu
565 570 575

Leu Leu Gly Cys Leu Tyr Glu Ser Gln Glu Glu Glu Leu Val Lys Glu
580 585 590

Val Met Ala Gln Phe Lys Glu Ile Ser Leu His Leu Asn Ala Val Asp
595 600 605

Val Val Pro Ser Ser Phe Cys Val Lys His Cys Arg Asn Leu Gln Lys
610 615 620

Met Ser Leu Gln Val Ile Lys Glu Asn Leu Pro Glu Asn Val Thr Ala
625 630 635 640

Ser Glu Ser Asp Ala Glu Val Glu Arg Ser Gln Asp Asp Gln His Met
645 650 655

Leu Pro Phe Trp Thr Asp Leu Cys Ser Ile Phe Gly Ser Asn Lys Asp
660 665 670

Leu Met Gly Leu Ala Ile Asn Asp Ser Phe Leu Ser Ala Ser Leu Val
675 680 685

Arg Ile Leu Cys Glu Gln Ile Ala Ser Asp Thr Cys His Leu Gln Arg
690 695 700

Val Val Phe Lys Asn Ile Ser Pro Ala Asp Ala His Arg Asn Leu Cys
705 710 715 720

Leu Ala Leu Arg Gly His Lys Thr Val Thr Tyr Leu Thr Leu Gln Gly
725 730 735

Asn Asp Gln Asp Asp Met Phe Pro Ala Leu Cys Glu Val Leu Arg His
740 745 750

Pro Glu Cys Asn Leu Arg Tyr Leu Gly Leu Val Ser Cys Ser Ala Thr
755 760 765

Thr Gln Gln Trp Ala Asp Leu Ser Leu Ala Leu Glu Val Asn Gln Ser
770 775 780

Leu Thr Cys Val Asn Leu Ser Asp Asn Glu Leu Leu Asp Glu Gly Ala
785 790 795 800

Lys Leu Leu Tyr Thr Thr Leu Arg His Pro Lys Cys Phe Leu Gln Arg
805 810 815

Leu Ser Leu Glu Asn Cys His Leu Thr Glu Ala Asn Cys Lys Asp Leu
820 825 830

Ala Ala Val Leu Val Val Ser Arg Glu Leu Thr His Leu Cys Leu Ala
835 840 845

Lys Asn Pro Ile Gly Asn Thr Gly Val Lys Phe Leu Cys Glu Gly Leu
850 855 860

Arg Tyr Pro Glu Cys Lys Leu Gln Thr Leu Val Leu Trp Asn Cys Asp
865 870 875 880

Ile Thr Ser Asp Gly Cys Cys Asp Leu Thr Lys Leu Leu Gln Glu Lys
885 890 895

Ser Ser Leu Leu Cys Leu Asp Leu Gly Leu Asn His Ile Gly Val Lys
900 905 910

Gly Met Lys Phe Leu Cys Glu Ala Leu Arg Lys Pro Leu Cys Asn Leu
915 920 925

Arg Cys Leu Trp Leu Trp Gly Cys Ser Ile Pro Pro Phe Ser Cys Glu
930 935 940

Asp Leu Cys Ser Ala Leu Ser Asn Gln Ser Leu Val Thr Leu Asp Leu
945 950 955 960

Gly Gln Asn Pro Leu Gly Ser Ser Gly Val Lys Met Leu Phe Glu Thr
965 970 975

Leu Thr Cys Ser Ser Gly Thr Leu Arg Thr Leu Arg Leu Lys Ile Asp

980 985 990

Asp Phe Asn Asp Glu Leu Asn Lys Leu Leu Glu Glu Ile Glu Glu Lys
995 1000 1005

Asn Pro Gln Leu Ile Ile Asp Thr Glu Lys His His Pro Trp Ala
1010 1015 1020

Glu Arg Pro Ser Ser His Asp Phe Met Ile
1025 1030

<210> 5
<211> 2763
<212> DNA
<213> Homo Sapiens

<400> 5
cggacgcgtg ggcgcgcagc ctggctgacc tgatcctgga ccagtgcccc gaccgcggcg 60

cgccggtgcc gcagatgctg gcccagccgc agcggctgct cttcatcctg gacggcgcgg 120

acgagctgcc ggcgctgggg ggccccgagg ccgcgccctg cacagacccc ttcgaggcgg 180

cgagcggcgc gcgggtgcta ggcgggctgc tgagtaaggc gctgctgccc acggccctcc 240

tgctggtgac cacgcgcgcc gccgcccccg ggaggctgca gggccgcctg tgttccccgc 300

agtgcgccga ggtgcgcggc ttctccgaca aggacaagaa gaagtatttc tacaagttct 360

tccgggatga gaggagggcc gagcgcgcct accgcttcgt gaaggagaac gagacgctgt 420

tcgcgctgtg cttcgtgccc ttcgtgtgct ggatcgtgtg caccgtgctg cgccagcagc 480

tggagctcgg tcgggacctg tcgcgcacgt ccaagaccac cacgtcagtg tacctgcttt 540

tcatcaccag cgttctgagc tcggctccgg tagccgacgg gccccggttg cagggcgacc 600

tgcgcaatct gtgccgcctg gcccgcgagg gcgtcctcgg acgcagggcg cagtttgccg 660

agaaggaact ggagcaactg gagcttcgtg gctccaaagt gcagacgctg tttctcagca 720

aaaaggagct gccgggcgtg ctggagacag aggtcaccta ccagttcatc gaccagagct 780

tccaggagtt cctcgcggca ctgtcctacc tgctggagga cggcggggtg cccaggaccg 840

cggctggcgg cgttgggaca ctcctgcgtg gggacgccca gccgcacagc cacttggtgc 900

tcaccacgcg cttcctcttc ggactgctga gcgcggagcg gatgcgcgac atcgagcgcc 960

acttcggctg catggtttca gagcgtgtga agcaggaggc cctgcggtgg gtgcagggac 1020

agggacaggg ctgccccgga gtggcaccag aggtgaccga gggggccaaa gggctcgagg 1080

acaccgaaga gccagaggag gaggaggagg gagaggagcc caactaccca ctggagttgc 1140

tgtactgcct gtacgagacg caggaggacg cgtttgtgcg ccaagccctg tgccggttcc 1200

cggagctggc gctgcagcga gtgcgcttct gccgcatgga cgtggctgtt ctgagctact 1260

gcgtgaggtg ctgccctgct ggacaggcac tgcggctgat cagctgcaga ttggttgctg 1320

cgcaggagaa gaagaagaag agcctgggga agcggctcca ggccagcctg ggtggcggca 1380

gttctcaagg caccacaaaa caactgccag cctcccttct tcatccactc tttcaggcaa 1440

tgactgaccc actgtgccat ctgagcagcc tcacgctgtc ccactgcaaa ctccctgacg 1500

cggtctgccg agacctttct gaggccctga gggcagcccc cgcactgacg gagctgggcc 1560

tcctccacaa caggctcagt gaggcgggac tgcgtatgct gagtgagggc ctagcctggc 1620

cgcagtgcag ggtgcagacg gtcaggtgag gcctggcctg ggagggaccg tgggatgccc 1680

ccgccacccc agcagctcct gaggtcggcc ctcccacagg gtacagctgc ctgaccccca 1740

gcgagggctc cagtacctgg tgggtatgct tcggcagagc cccgccctga ccaccctgga 1800

tctcagcggc tgccaactgc ccgcccccat ggtgacctac ctgtgtgcag tcctgcagca 1860

ccagggatgc ggcctgcaga ccctcagtct ggcctctgtg gagctgagcg agcagtcact 1920

acaggagctt caggctgtga agagagcaaa gccggatctg gtcatcacac acccagcgct 1980

ggacggccac ccacaacctc ccaaggaact catctcgacc ttctgaggct ctggtggcca 2040

gagcagggtg gaagacccta gtcaaagtcc ctgtggagag aacggcccat tccaagggca 2100

ggaggatatt gctctcggcc tttgggaaac ttttgagccg agaggccgca gacaggcatg 2160

tgggaggccc agacacggca ccctgccccg tccaggacag gcccaggacc tgcccctctc 2220

tccacacctg gggtacccct tctcccccag ccccaccact actccaccca ccttcctctc 2280

ctgagaccct ccagccattc cccttgaaaa caccccccga ccccaagcca caataatgac 2340

agcgagagct ccaattaact aagcacctac ctggcggcag aataaccctt cactgcctga 2400

tccccatctg cagtgtggcc caacagcccc cagaactatg cccacataga ctggaggtag 2460

gcagttcacc gtccctccct gttaggaatg agaccatccc tgaggctatg gcccaggccc 2520

acaggcgtcc agtgtctgag atctttggga agggagacta gggcaggtgg agacagcgca 2580

gaaccccccgt gctgggtggg aagcatgacc acatggtggg tgagcagccc ccatgcactg 2640

acggtaaatt cccctgtgga ctcatttctg ttggtttcta ttacacctgg ccaggcgtgg 2700

tacaatacag gtcggtgctc acaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2760

aaa 2763

<210> 6
<211> 2054
<212> DNA
<213> Homo Sapiens

<400> 6
ggaactggag caactggagc ttcgtggctc caaagtgcag acgctgtttc tcagcaaaaa 60

ggagctgccg ggcgtgctgg agacagaggt cacctaccag ttcatcgacc agagcttcca 120

ggagttcctc gcggcactgt cctacctgct ggaggacggc ggggtgccca ggaccgcggc 180

tggcggcgtt gggacactcc tgcgtgggga cgcccagccg cacagccact tggtgctcac 240

cacgcgcttc ctcttcggac tgctgagcgc ggagcggatg cgcgacatcg agcgccactt 300

cggctgcatg gtttcagagc gtgtgaagca ggaggccctg cggtgggtgc agggacaggg 360

acagggctgc cccggagtgg caccagaggt gaccgagggg gccaaagggc tcgaggacac 420

cgaagagcca gaggaggagg aggagggaga ggagcccaac tacccactgg agttgctgta 480

ctgcctgtac gagacgcagg aggacgcgtt tgtgcgccaa gccctgtgcc ggttcccgga 540

gctggcgctg cagcgagtgc gcttctgccg catggacgtg gctgttctga gctactgcgt 600

gaggtgctgc cctgctggac aggcactgcg gctgatcagc tgcagattgg ttgctgcgca 660

ggagaagaag aagaagagcc tggggaagcg gctccaggcc agcctgggtg gcggcagttc 720

tcaaggcacc acaaaacaac tgccagcctc ccttcttcat ccactctttc aggcaatgac 780

tgacccactg tgccatctga gcagcctcac gctgtcccac tgcaaactcc ctgacgcggt 840

ctgccgagac ctttctgagg ccctgagggc agcccccgca ctgacggagc tgggcctcct 900

ccacaacagg ctcagtgagg cgggactgcg tatgctgagt gagggcctag cctggccgca 960

gtgcagggtg cagacggtca gggtacagct gcctgacccc cagcgagggc tccagtacct 1020

ggtgggtatg cttcggcaga gccccgccct gaccaccctg gatctcagcg gctgccaact 1080

gcccgccccc atggtgacct acctgtgtgc agtcctgcag caccagggat gcggcctgca 1140

gaccctcagt ctggcctctg tggagctgag cgagcagtca ctacaggagc ttcaggctgt 1200

gaagagagca aagccggatc tggtcatcac acacccagcg ctggacggcc acccacaacc 1260

tcccaaggaa ctcatctcga ccttctgagg ctctggtggc cagagcaggg tggaagaccc 1320

tagtcaaagt ccctgtggag agaacggccc attccaaggg caggaggata ttgctctcgg 1380

cctttgggaa acttttgagc cgagaggccg cagacaggca tgtgggaggc ccagacacgg 1440

caccctgccc cgtccaggac aggcccagga cctgcccctc tctccacacc tggggtaccc 1500

cttctccccc agccccacca ctactccacc caccttcctc tcctgagacc ctccagccat 1560

tccccttgaa aacacccccc gaccccaagc cacaataatg acagcgagag ctccaattaa 1620

ctaagcacct acctgggggc agaataaccc ttcactgcct gatccccatc tgcagtgtgg 1680

cccaacagcc cccagaacta tgcccacata gactggaggt aggcagttca ccgtccctcc 1740

ctgttaggaa tgagaccatc cctgaggcta tggcccaggc ccacaggcgt ccagtgtctg 1800

agatctttgg gaagggagac tagggcaggt ggagacagcg cagaaccccc gtgctgggtg 1860

ggaagcatga ccacacggtg ggtgagcagc ccccatgcac tgatggtaaa ttcccctgtg 1920

gactcatttc tgttggtttc tattacacct ggccaggcgt ggtacaatac aggtcggtgc 1980

tcacaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2040

aaaaaaaaaa aaaa 2054

<210> 7
<211> 314
<212> DNA
<213> homo sapiens

<220>
<221> misc_feature
<222> (198)..(229)
<223> wherein "n" is equal to A, C, G, or T.

<400> 7
gccacttggt gctcaccacg cgcttcctct tcggactgct gagcgcggag ggatgcgcga 60

catcgagcgc cacttcggct gcatggtttc agagcgtgtg aagcaggagg ccctgcggtg 120

ggtgcaggga cagggacagg gctgccccgg agtggcacca gaggtgaccg aggggccaa 180

agggctcgag gacaccgnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnc ccaactaccc 240

actggagttg ctgtactgcc tgtacgagac gcaggaggac gcgtttgtnc gccaaagccc 300

tgtgccggtt cccg 314

<210> 8
<211> 24
<212> PRT
<213> homo sapiens

<400> 8

Gly Ala Arg Val Leu Gly Gly Leu Leu Ser Lys Ala Leu Leu Pro Thr
1 5 10 15

Ala Leu Leu Leu Val Thr Thr Arg
20

<210> 9
<211> 17
<212> PRT
<213> homo sapiens

<400> 9

Leu Phe Ala Leu Cys Phe Val Pro Phe Val Cys Trp Ile Val Cys Thr
1 5 10 15

Val

<210> 10
<211> 17
<212> PRT
<213> homo sapiens

<400> 10

Ser Val Tyr Leu Leu Phe Ile Thr Ser Val Leu Ser Ser Ala Pro Val
1 5 10 15

Ala

<210> 11
<211> 21
<212> DNA
<213> Homo sapiens

<400> 11
catggtttca gagcgtgtga a 21

<210> 12
<211> 23
<212> DNA
<213> Homo sapiens

<400> 12
tcgtacaggc agtacagcaa ctc 23

<210> 13
<211> 80
<212> DNA
<213> Homo sapiens

<400> 13
cttcacacgc tctgaaacca tgcagccgaa gtggcgctcg atgtcgcgca tccctccgcg 60

ctcagcagtc cgaagaggaa 80

<210> 14
<211> 14
<212> PRT
<213> homo sapiens

<400> 14

Arg Phe Val Lys Glu Asn Glu Thr Leu Phe Ala Leu Cys Phe
1 5 10

<210> 15
<211> 17
<212> PRT
<213> homo sapiens

<400> 15

Phe Phe Arg Asp Glu Arg Arg Ala Glu Arg Ala Tyr Arg Phe Val Lys
1 5 10 15

Glu

<210> 16
<211> 13
<212> PRT
<213> homo sapiens

<400> 16

Ala Leu Leu Leu Val Thr Thr Arg Ala Ala Ala Pro Gly
1 5 10

<210> 17
<211> 13
<212> PRT
<213> homo sapiens

<400> 17

Glu Val Arg Gly Phe Ser Asp Lys Asp Lys Lys Lys Tyr
1 5 10

<210> 18
<211> 13
<212> PRT
<213> homo sapiens

<400> 18

Arg Asp Leu Ser Arg Thr Ser Lys Thr Thr Thr Ser Val
1 5 10

<210> 19
<211> 13
<212> PRT
<213> homo sapiens

<400> 19

Gln Thr Leu Phe Leu Ser Lys Lys Glu Leu Pro Gly Val
1 5 10

<210> 20
<211> 13
<212> PRT
<213> homo sapiens

<400> 20

Ser His Leu Val Leu Thr Thr Arg Phe Leu Phe Gly Leu
1 5 10

<210> 21
<211> 13
<212> PRT
<213> homo sapiens

<400> 21

Phe Gly Cys Met Val Ser Glu Arg Val Lys Gln Glu Ala
1 5 10

<210> 22

<211> 13
<212> PRT
<213> homo sapiens

<400> 22

Ala Leu Arg Leu Ile Ser Cys Arg Leu Val Ala Ala Gln
1 5 10

<210> 23
<211> 13
<212> PRT
<213> homo sapiens

<400> 23

Gly Ser Ser Gln Gly Thr Thr Lys Gln Leu Pro Ala Ser
1 5 10

<210> 24
<211> 13
<212> PRT
<213> homo sapiens

<400> 24

Gln Cys Arg Val Gln Thr Val Arg Val Gln Leu Pro Asp
1 5 10

<210> 25
<211> 514
<212> PRT
<213> homo sapiens

<400> 25

Met Cys Phe Ile Pro Leu Val Cys Trp Ile Val Cys Thr Gly Leu Lys
1 5 10 15

Gln Gln Met Glu Ser Gly Lys Ser Leu Ala Gln Thr Ser Lys Thr Ser
20 25 30

Thr Ala Val Tyr Val Phe Phe Leu Ser Ser Leu Leu Gln Pro Arg Gly
35 40 45

Gly Ser Gln Glu His Gly Leu Cys Ala His Leu Trp Gly Leu Cys Ser
50 55 60

Leu Ala Ala Asp Gly Ile Trp Asn Gln Lys Ile Leu Phe Glu Glu Ser
65 70 75 80

Asp Leu Arg Asn His Gly Leu Gln Lys Ala Asp Val Ser Ala Phe Leu
85 90 95

Arg Met Asn Leu Phe Gln Lys Glu Val Asp Cys Glu Lys Phe Tyr Ser
100 105 110

Phe Ile His Met Thr Phe Gln Glu Phe Phe Ala Ala Met Tyr Tyr Leu
115 120 125

Leu Glu Glu Glu Lys Glu Gly Arg Thr Asn Val Pro Gly Ser Arg Leu

130 135 140

Lys Leu Pro Ser Arg Asp Val Thr Val Leu Leu Glu Asn Tyr Gly Lys
145 150 155 160

Phe Glu Lys Gly Tyr Leu Ile Phe Val Val Arg Phe Leu Phe Gly Leu
165 170 175

Val Asn Gln Glu Arg Thr Ser Tyr Leu Glu Lys Lys Leu Ser Cys Met
180 185 190

Ile Ser Gln Gln Ile Arg Leu Glu Leu Leu Lys Trp Ile Glu Val Lys
195 200 205

Ala Lys Ala Lys Lys Leu His Asp Gln Pro Ser Gln Leu Glu Leu Phe
210 215 220

Tyr Cys Leu Tyr Glu Met Gln Glu Glu Asp Phe Val Gln Arg Ala Met
225 230 235 240

Asp Tyr Phe Pro Lys Ile Glu Ile Asn Leu Ser Thr Arg Met Asp His
245 250 255

Met Val Ser Ser Phe Cys Ile Glu Asn Cys His Arg Val Glu Ser Leu
260 265 270

Ser Leu Gly Phe Leu His Asn Met Pro Lys Glu Glu Glu Glu Glu Glu
275 280 285

Lys Glu Gly Arg His Leu Asp Met Val Gln Cys Val Leu Pro Ser Ser
290 295 300

Ser His Ala Ala Cys Ser His Gly Leu Gly Arg Cys Gly Leu Ser His
305 310 315 320

Glu Cys Cys Phe Asp Ile Ser Leu Val Leu Ser Ser Asn Gln Lys Leu
325 330 335

Val Glu Leu Asp Leu Ser Asp Asn Ala Leu Gly Asp Phe Gly Ile Arg
340 345 350

Leu Leu Cys Val Gly Leu Lys His Leu Leu Cys Asn Leu Lys Lys Leu
355 360 365

Trp Leu Val Asn Ser Ala Leu Arg Gln Ser Val Val Gln Leu Cys Pro
370 375 380

Arg Tyr Ser Ala Leu Ile Arg Ile Ser Arg Thr Phe Thr Ala Arg Gln
385 390 395 400

His Ser Arg Arg Gln Gly Ile Lys Leu Leu Cys Glu Gly Leu Leu His
405 410 415

Pro Asp Cys Lys Leu Gln Val Leu Glu Leu Asp Asn Cys Asn Leu Thr
420 425 430

Ser His Cys Cys Trp Asp Leu Ser Thr Leu Leu Thr Ser Ser Gln Ser
435 440 445

Leu Arg Lys Leu Ser Leu Gly Asn Asn Asp Leu Gly Asp Leu Gly Val
450 455 460

```
Met Met Phe Cys Glu Val Leu Lys Gln Gln Ser Cys Leu Leu Gln Asn
465                 470                 475                 480

Leu Gly Leu Ser Glu Met Tyr Phe Asn Tyr Glu Thr Lys Ser Ala Leu
                485                 490                 495

Glu Thr Leu Gln Glu Glu Lys Pro Glu Leu Thr Val Val Phe Glu Pro
            500                 505                 510

Ser Trp
```

<210> 26
<211> 1429
<212> PRT
<213> homo sapiens

<400> 26

```
Met Ala Gly Gly Ala Trp Gly Arg Leu Ala Cys Tyr Leu Glu Phe Leu
1               5                   10                  15

Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Leu Ala Asn Lys Ala
            20                  25                  30

His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr
        35                  40                  45

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln
    50                  55                  60

Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg
65                  70                  75                  80

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe
                85                  90                  95

Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr
            100                 105                 110

Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys
        115                 120                 125

Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser
    130                 135                 140

Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu
145                 150                 155                 160

Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala
                165                 170                 175

Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro
            180                 185                 190

Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu
        195                 200                 205

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg
    210                 215                 220
```

Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr
225 230 235 240

Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu
245 250 255

Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu
260 265 270

Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His
275 280 285

Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val
290 295 300

Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro
305 310 315 320

Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala
325 330 335

Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly
340 345 350

Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser
355 360 365

Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile
370 375 380

Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser
385 390 395 400

Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly
405 410 415

Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln
420 425 430

Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile
435 440 445

Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln
450 455 460

Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly
465 470 475 480

Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp
485 490 495

Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu
500 505 510

Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr
515 520 525

Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser
530 535 540

Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln
545 550 555 560

Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala
565 570 575

Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg
580 585 590

Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly
595 600 605

Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu
610 615 620

Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu
625 630 635 640

Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr
645 650 655

Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg
660 665 670

Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn
675 680 685

Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val
690 695 700

Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His
705 710 715 720

Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala
725 730 735

His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu
740 745 750

Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln
755 760 765

Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val
770 775 780

Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu
785 790 795 800

Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser
805 810 815

Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu
820 825 830

Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly
835 840 845

Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn
850 855 860

Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala

865 870 875 880

Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu
885 890 895

Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln
900 905 910

Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp
915 920 925

Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu
930 935 940

Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Leu Asp Gln
945 950 955 960

Thr Thr Leu Ser Asp Glu Met Arg Gln Glu Leu Arg Ala Leu Glu Gln
965 970 975

Glu Lys Pro Gln Leu Leu Ile Phe Ser Arg Arg Lys Pro Ser Val Met
980 985 990

Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser Thr Ser
995 1000 1005

Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser His
1010 1015 1020

Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe
1025 1030 1035

Pro Ile Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro
1040 1045 1050

Val Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu
1055 1060 1065

His Thr Lys Pro Leu Gly Thr Asp Asp Asp Phe Trp Gly Pro Thr
1070 1075 1080

Gly Pro Val Ala Thr Glu Val Val Asp Lys Glu Lys Asn Leu Tyr
1085 1090 1095

Arg Val His Phe Pro Val Ala Gly Ser Tyr Arg Trp Pro Asn Thr
1100 1105 1110

Gly Leu Cys Phe Val Met Arg Glu Ala Val Thr Val Glu Ile Glu
1115 1120 1125

Phe Cys Val Trp Asp Gln Phe Leu Gly Glu Ile Asn Pro Gln His
1130 1135 1140

Ser Trp Met Val Ala Gly Pro Leu Leu Asp Ile Lys Ala Glu Pro
1145 1150 1155

Gly Ala Val Glu Ala Val His Leu Pro His Phe Val Ala Leu Gln
1160 1165 1170

Gly Gly His Val Asp Thr Ser Leu Phe Gln Met Ala His Phe Lys
1175 1180 1185

Glu Glu Gly Met Leu Leu Glu Lys Pro Ala Arg Val Glu Leu His
1190 1195 1200

His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro Leu Gly Val Leu
1205 1210 1215

Leu Lys Met Ile His Asn Ala Leu Arg Phe Ile Pro Val Thr Ser
1220 1225 1230

Val Val Leu Leu Tyr His Arg Val His Pro Glu Glu Val Thr Phe
1235 1240 1245

His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Glu Leu
1250 1255 1260

Glu Leu Cys Tyr Arg Ser Pro Gly Glu Asp Gln Leu Phe Ser Glu
1265 1270 1275

Phe Tyr Val Gly His Leu Gly Ser Gly Ile Arg Leu Gln Val Lys
1280 1285 1290

Asp Lys Lys Asp Glu Thr Leu Val Trp Glu Ala Leu Val Lys Pro
1295 1300 1305

Gly Asp Leu Met Pro Ala Thr Thr Leu Ile Pro Pro Ala Arg Ile
1310 1315 1320

Ala Val Pro Ser Pro Leu Asp Ala Pro Gln Leu Leu His Phe Val
1325 1330 1335

Asp Gln Tyr Arg Glu Gln Leu Ile Ala Arg Val Thr Ser Val Glu
1340 1345 1350

Val Val Leu Asp Lys Leu His Gly Gln Val Leu Ser Gln Glu Gln
1355 1360 1365

Tyr Glu Arg Val Leu Ala Glu Asn Thr Arg Pro Ser Gln Met Arg
1370 1375 1380

Lys Leu Phe Ser Leu Ser Gln Ser Trp Asp Arg Lys Cys Lys Asp
1385 1390 1395

Gly Leu Tyr Gln Ala Leu Lys Glu Thr His Pro His Leu Ile Met
1400 1405 1410

Glu Leu Trp Glu Lys Gly Ser Lys Lys Gly Leu Leu Pro Leu Ser
1415 1420 1425

Ser

<210> 27
<211> 8
<212> PRT
<213> bacteriophage T7

<400> 27

Asp Tyr Lys Asp Asp Asp Asp Lys
1 5

<210> 28
<211> 733
<212> DNA
<213> homo sapiens

<400> 28
gggatccgga gcccaaatct tctgacaaaa ctcacacatg cccaccgtgc ccagcacctg 60

aattcgaggg tgcaccgtca gtcttcctct tccccccaaa acccaaggac accctcatga 120

tctcccggac tcctgaggtc acatgcgtgg tggtggacgt aagccacgaa gaccctgagg 180

tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca aagccgcggg 240

aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg caccaggact 300

ggctgaatgg caaggagtac aagtgcaagg tctccaacaa agccctccca acccccatcg 360

agaaaaccat ctccaaagcc aaagggcagc cccgagaacc acaggtgtac accctgcccc 420

catcccggga tgagctgacc aagaaccagg tcagcctgac ctgcctggtc aaaggcttct 480

atccaagcga catcgccgtg gagtgggaga gcaatgggca gccggagaac aactacaaga 540

ccacgcctcc cgtgctggac tccgacggct ccttcttcct ctacagcaag ctcaccgtgg 600

acaagagcag gtggcagcag gggaacgtct tctcatgctc cgtgatgcat gaggctctgc 660

acaaccacta cacgcagaag agcctctccc tgtctccggg taaatgagtg cgacggccgc 720

gactctagag gat 733

<210> 29
<211> 39
<212> DNA
<213> Homo sapiens

<400> 29
gcagcagcgg ccgcgacggg ccccggttgc agggcgacc 39

<210> 30
<211> 37
<212> DNA
<213> Homo sapiens

<400> 30
gcagcagtcg acagaaggtc gagatgagtt ccttggg 37

<210> 31
<211> 39
<212> DNA
<213> Homo sapiens

<400> 31
gcagcagcgg ccgcatgctg gcccagccgc agcggctgc 39

<210> 32
<211> 37
<212> DNA
<213> Homo sapiens

<400> 32
gcagcagtcg acatccaggg tggtcagggc ggggctc 37

<210> 33
<211> 25
<212> DNA
<213> artificial

<220>
<223> Synthesized oligonucleotide.

<400> 33
cctctcatcc cggaagaacu uguag 25

<210> 34
<211> 25
<212> DNA
<213> artificial

<220>
<223> Synthesized oligonucleotide.

<400> 34
ggcctcctgc uucacacgcu cugaa 25

<210> 35
<211> 25
<212> DNA
<213> artificial

<220>
<223> Synthesized oligonucleotide.

<400> 35
aactcctgga agcucugguc gauga 25

<210> 36
<211> 25
<212> DNA
<213> artificial

<220>
<223> Synthesized oligonucleotide.

<400> 36
gtctgcactu uggagccacg aagct 25

<210> 37
<211> 25
<212> DNA
<213> artificial

<220>
<223> Synthesized oligonucleotide.

<400> 37
ttctccttca cgaagcggua ggcgc 25

<210> 38
<211> 24
<212> DNA
<213> Homo sapiens

<400> 38
gaggatgagg agagctatga caca 24

<210> 39
<211> 22
<212> DNA
<213> Homo sapiens

<400> 39
ccctttgcac tcataacgtc ag 22

<210> 40
<211> 29
<212> DNA
<213> Homo sapiens

<400> 40
aaacacacag tcatcatagg gcagctcgt 29